$termvar,\ x,\ y,\ z,\ f$			
$typevar,\ X,\ Y,\ Z$			
$index,\ i,\ j,\ k$			
$t,\ c,\ s$	$::=$		
	$\mid$	x	
	$\mid$	triv	
	$\mid$	squash_U	
	$\mid$	split_U	
	$\mid$	Squash_S	
	$\mid$	Split_S	
	$\mid$	box_C	
	$\mid$	unbox_C	
	$\mid$	$\lambda x : A.t$	
	$\mid$	$t_1\ t_2$	
	$\mid$	(t_1, t_2)	
	$\mid$	$\mathsf{fst}\ t$	
	$\mid$	$\mathsf{snd}\ t$	
	$\mid$	$\mathsf{succ}\ t$	
	$\mid$	0	
	$\mid$	$\mathsf{case}\ t\ \mathsf{of}\ 0 \to t_1, (\mathsf{succ}\ x) \to t_2$	
	$\mid$	(t)	S
n	$::=$		
	$\mid$	0	
	$\mid$	$\mathsf{succ}\ n$	
v	$::=$		
	$\mid$	triv	
	$\mid$	$\lambda x : A.t$	
	$\mid$	n	
	$\mid$	split_U	
	$\mid$	squash_U	
	$\mid$	box_C	
	$\mid$	unbox_C	
T	$::=$		
	$\mid$	Unit	
	$\mid$	Nat	
$A,\ B,\ C,\ D,\ E,\ R,\ X,\ Y,\ U,\ S$	$::=$		
	$\mid$	Unit	
	$\mid$	Nat	
	$\mid$	$?$	
	$\mid$	$A_1 \to A_2$	
	$\mid$	$A_1 \times A_2$	
	$\mid$	(A)	S
Γ	$::=$		
	$\mid$	$.$	
	$\mid$	$\Gamma, x : A$	

$\boxed{\Gamma \vdash t : A}$

$$\frac{x : A \in \Gamma}{\Gamma \vdash x : A}\ \textsc{var}$$

$$\frac{}{\Gamma \vdash \mathsf{box}_T : T \to ?}\ \textsc{Box}$$

$$\frac{}{\Gamma \vdash \mathsf{unbox}_T : ? \to T}\ \textsc{Unbox}$$

$$\frac{}{\Gamma \vdash \mathsf{Box}_A : A \to ?}\ \textsc{BoxG}$$

$$\frac{}{\Gamma \vdash \mathsf{Unbox}_A : ? \to A}\ \textsc{UnboxG}$$

$$\frac{}{\Gamma \vdash \mathsf{squash}_U : U \to ?}\ \textsc{squash}$$

$$\frac{}{\Gamma \vdash \mathsf{split}_U : ? \to U}\ \textsc{split}$$

$$\frac{}{\Gamma \vdash \mathsf{Split}_S : S \to ?}\ \textsc{SplitG}$$

$$\frac{}{\Gamma \vdash \mathsf{Squash}_S : ? \to S}\ \textsc{SquashG}$$

$$\frac{}{\Gamma \vdash \mathsf{triv} : \mathsf{Unit}}\ \textsc{unit}$$

$$\frac{}{\Gamma \vdash 0 : \mathsf{Nat}}\ \textsc{zero}$$

$$\frac{\Gamma \vdash t : \mathsf{Nat}}{\Gamma \vdash \mathsf{succ}\, t : \mathsf{Nat}}\ \textsc{succ}$$

$$\frac{\begin{array}{c}\Gamma \vdash t : \mathsf{Nat} \\ \Gamma \vdash t_1 : A \quad \Gamma, x : \mathsf{Nat} \vdash t_2 : A\end{array}}{\Gamma \vdash \mathsf{case}\, t\, \mathsf{of}\, 0 \to t_1, (\mathsf{succ}\, x) \to t_2 : A}\ \textsc{case}$$

$$\frac{\Gamma \vdash t_1 : A_1 \quad \Gamma \vdash t_2 : A_2}{\Gamma \vdash (t_1, t_2) : A_1 \times A_2}\ \textsc{pair}$$

$$\frac{\Gamma \vdash t : A_1 \times A_2}{\Gamma \vdash \mathsf{fst}\, t : A_1}\ \textsc{fst}$$

$$\frac{\Gamma \vdash t : A_1 \times A_2}{\Gamma \vdash \mathsf{snd}\, t : A_2}\ \textsc{snd}$$

$$\frac{\Gamma, x : A \vdash t : B}{\Gamma \vdash \lambda x : A_1 . t : A \to B}\ \textsc{lam}$$

$$\frac{\Gamma \vdash t_1 : A \to B \quad \Gamma \vdash t_2 : A}{\Gamma \vdash t_1\, t_2 : B}\ \textsc{app}$$

$\boxed{\Gamma \vdash t_1 \rightsquigarrow t_2 : A}$

$$\frac{x : A \in \Gamma}{\Gamma \vdash x \rightsquigarrow x : A}\ \textsc{rd\_var}$$

$$\frac{\Gamma \vdash t : T}{\Gamma \vdash \mathsf{unbox}_T\, (\mathsf{box}_T\, t) \rightsquigarrow t : T}\ \textsc{rd\_retract}$$

$$\frac{\Gamma \vdash t_1 \rightsquigarrow t_2 : T}{\Gamma \vdash \mathsf{unbox}_T\ t_1 \rightsquigarrow \mathsf{unbox}_T\ t_2 : T}\ \text{RD\_UNBOX}$$

$$\frac{\Gamma \vdash t : A}{\Gamma \vdash \mathsf{Unbox}_A\ (\mathsf{Box}_A\ t) \rightsquigarrow t : A}\ \text{RD\_RETRACTG}$$

$$\frac{\Gamma \vdash t : S}{\Gamma \vdash \mathsf{Split}_S\ (\mathsf{Squash}_S\ t) \rightsquigarrow t : S}\ \text{RD\_RETRACTSG}$$

$$\frac{\Gamma \vdash t : U}{\Gamma \vdash \mathsf{split}_U\ (\mathsf{squash}_U\ t) \rightsquigarrow t : U}\ \text{RD\_RETRACTU}$$

$$\frac{\Gamma \vdash t_1 \rightsquigarrow t_2 : U}{\Gamma \vdash \mathsf{split}_U\ t_1 \rightsquigarrow \mathsf{split}_U\ t_2 : U}\ \text{RD\_SPLIT}$$

$$\frac{\Gamma \vdash t \rightsquigarrow t' : \mathsf{Nat}}{\Gamma \vdash \mathsf{succ}\ t \rightsquigarrow \mathsf{succ}\ t' : \mathsf{Nat}}\ \text{RD\_SUCC}$$

$$\frac{\Gamma \vdash t_1 : A \quad \Gamma, x : \mathsf{Nat} \vdash t_2 : A}{\Gamma \vdash \mathsf{case}\ 0\ \mathsf{of}\ 0 \to t_1, (\mathsf{succ}\ x) \to t_2 \rightsquigarrow t_1 : A}\ \text{RD\_CASE0}$$

$$\frac{\begin{array}{c}\Gamma \vdash t : \mathsf{Nat} \\ \Gamma \vdash t_1 : A \quad \Gamma, x : \mathsf{Nat} \vdash t_2 : A\end{array}}{\Gamma \vdash \mathsf{case}\ (\mathsf{succ}\ t)\ \mathsf{of}\ 0 \to t_1, (\mathsf{succ}\ x) \to t_2 \rightsquigarrow [t/x]t_2 : A}\ \text{RD\_CASESUCC}$$

$$\frac{\begin{array}{c}\Gamma \vdash t \rightsquigarrow t' : \mathsf{Nat} \\ \Gamma \vdash t_1 : A \quad \Gamma, x : \mathsf{Nat} \vdash t_2 : A\end{array}}{\Gamma \vdash \mathsf{case}\ t\ \mathsf{of}\ 0 \to t_1, (\mathsf{succ}\ x) \to t_2 \rightsquigarrow \mathsf{case}\ t'\ \mathsf{of}\ 0 \to t_1, (\mathsf{succ}\ x) \to t_2 : A}\ \text{RD\_CASE}$$

$$\frac{\Gamma, x : A_1 \vdash t_1 : A_2 \quad \Gamma \vdash t_2 : A_1}{\Gamma \vdash (\lambda x : A_1.t_1)\ t_2 \rightsquigarrow [t_2/x]t_2 : A_2}\ \text{RD\_BETA}$$

$$\frac{\Gamma \vdash t_1 : A_1 \quad \Gamma \vdash t_2 : A_2}{\Gamma \vdash \mathsf{fst}\ (t_1, t_2) \rightsquigarrow t_1 : A_1}\ \text{RD\_PROJ1}$$

$$\frac{\Gamma \vdash t_1 : A_1 \quad \Gamma \vdash t_2 : A_2}{\Gamma \vdash \mathsf{snd}\ (t_1, t_2) \rightsquigarrow t_2 : A_2}\ \text{RD\_PROJ2}$$

$$\frac{\Gamma \vdash t_1 \rightsquigarrow t_1' : A_1 \to A_2 \quad \Gamma \vdash t_2 : A_1}{\Gamma \vdash t_1\ t_2 \rightsquigarrow t_1'\ t_2 : A_2}\ \text{RD\_APP1}$$

$$\frac{\Gamma \vdash v : A_1 \to A_2 \quad \Gamma \vdash t \rightsquigarrow t' : A_1}{\Gamma \vdash v\ t \rightsquigarrow v\ t' : A_2}\ \text{RD\_APP2}$$

$$\frac{\Gamma \vdash t \rightsquigarrow t' : A_1 \times A_2}{\Gamma \vdash \mathsf{fst}\ t \rightsquigarrow \mathsf{fst}\ t' : A_1}\ \text{RD\_FST}$$

$$\frac{\Gamma \vdash t \rightsquigarrow t' : A_1 \times A_2}{\Gamma \vdash \mathsf{snd}\ t \rightsquigarrow \mathsf{snd}\ t' : A_2}\ \text{RD\_SND}$$

$$\frac{\Gamma \vdash t_1 \rightsquigarrow t_1' : A_1 \quad \Gamma \vdash t_2 : A_2}{\Gamma \vdash (t_1, t_2) \rightsquigarrow (t_1', t_2) : A_1 \times A_2}\ \text{RD\_PAIR1}$$

$$\frac{\Gamma \vdash t_1 : A_1 \quad \Gamma \vdash t_2 \rightsquigarrow t_2' : A_2}{\Gamma \vdash (t_1, t_2) \rightsquigarrow (t_1, t_2') : A_1 \times A_2}\ \text{RD\_PAIR2}$$

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Definition rules:         38 good    0 bad
Definition rule clauses:  69 good    0 bad
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